

Abstract: The effects of Sc addition, different Er concentrations and deformation on phase transitions in Al(-Sc)-Er-Zr alloys were studied. Three distinct processes were identified during isochronal annealing in all of the alloys investigated. The first process with maximum at ~ 240 °C is probably related to clustering of Er or to clustering of Er and Sc atoms, respectively. This effect was more pronounced in the deformed alloy due to easier diffusion of solutes along dislocations and (sub)grain boundaries. The second process with a maximum around 360 °C stems from the formation of Al_3Er or $\text{Al}_3(\text{Er},\text{Sc})$ particles, respectively. This effect was more pronounced and led to a more significant hardening in the Sc-containing alloy. The third process is most likely related to the formation of Zr-rich shell around the previously formed precipitates. After aging at 600 °C, precipitates with a core made of Al_3Er phase and a shell made of $\text{Al}_3(\text{Er},\text{Zr})$ phase were observed in the Al-Er-Zr alloy.